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OFFICIAL PUBLICATION OF THE
MONTANA STATE FISH AND GAME COMMISSION

Comparison and Contrast

A Rhymed Editorial

By

John L. Boardman
Secretary Butte Anglers Club

THE SPORTSMAN

One who pursues the sports of fields, or other pleasures nature yields; who's on the square with bird and beast, or other humans in the least, will so conduct his pleasure quest that he alone comes second best.

By him are game laws now respected. In laws alone his love's protected. He does not kill a beast or fish, except to fill his plate or dish; or predatory creatures slay, and then in quick and painless way.

To him a fawn or song-bird's nest is sacred from the hunter's quest. The farmer's field is holy ground if any trespass sign is found. He would not break a blade of grass, or set his foot upon a pass where others' rights he might infringe, or cause some one to cry or cringe.

To him a roadside sign, or hand, is respected as a clear command to help all men along the way by light or dark or night or day, and always with his axe or gun, he blazes trails, or has his fun.

He never puts his name or face on any sacred public place. His deeds alone give him renown in county, state and old home town. His souvenirs are very few, for memory keen of places new, is all he needs to call a bluff—his words alone are proof enough.

He learns to be a handy man and when the ranger comes to scan, his campfire's neat and small and trim; just like a home a camp to him.

THE VANDAL

A wanderer of hostile mien to all that's pretty, sweet or clean; who finds his fun in breaking up all treasures rare, of book or eup; his selfish greed alone demands attention of his eyes and hands.

To him a law is merely passed to hang up in a frame of glass. His only consciousness of crime is being caught within the time the law provides, for such as he, to post a bond or pay a fee. He murders every living thing, in summer, fall or bounteous spring.

The suckling babe of woodland creature may starve and die without a feature showing any sign of pain for all he counts its loss or gain. He rambles through the field or pasture with trail of blood and crop disaster. He hesitates not to disparage a noble character or carriage.

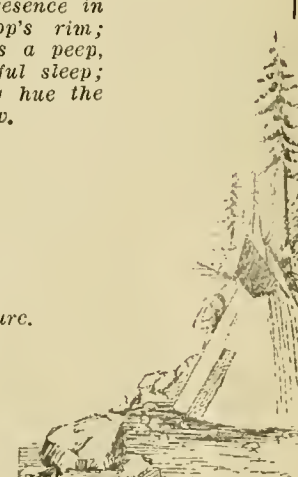
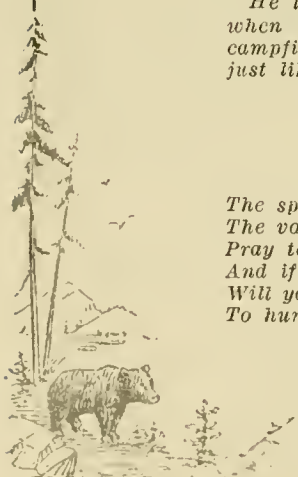
He bangs away at danger signs and shoots the guideposts clear of lines. He kills the trees and shoots his bullets in farmers' cows and pigs and pullets. One never knows—when he's about—whether safety lies inside or out.

His hated name and ugly face is found in many a public place. He cuts and carves and breaks and cracks, and every public treasure sacks. He kills the trees and birds and bees; his very breath pollutes the breeze. To follow him along the path fills everyone with righteous wrath.

The ranger dreads his presence in the forest, glade or hilltop's rim; when at his camp he takes a peep, he spends the night in fitful sleep; because of coals of glowing hue the vandal's sure to leave a few.

L'Envoi

*The sportsman's character and mind are like pure gems of rarest kind.
The vandal and the mean coyote are classed as one by every vole.
Pray tell me, sir, which of these two in some respect applies to you.
And if perchance a word or line has found its mark in deed or thine,
Will you but see it as it's meant—no thought of malice or intent
To hurt or mar your keenest pleasure in field or stream or woodland treasure.*



MONTANA WILD LIFE

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No. 2.

Montana's Upland Birds

By W. K. MOORE of Billings

Member Montana State Fish and Game Commission



W. K. Moore

FEW sportsmen in the state realize the increasing number of upland birds in Montana. I wish some way could be devised by which they could be counted, as are the elk herds, so that sportsmen who do not travel over the state to a great extent could know. There are a few counties where the sage grouse are thick—so thick, in fact, that the farmers are complain-

ing. One reason for sage grouse being in such large coveys has been caused by not creating an early open season. They seem to mature earlier than the pintail grouse, and the open season on grouse being in September, very few sage hens are shot. So many sportsmen believe sage grouse are not palatable when old. An earlier open season for just a few days will help scatter these birds into smaller flocks, and in time will put them over the state more generally.

Some counties have but few native pintail grouse, and there are several places where they are thick. Our upland birds and sage grouse have increased wonderfully in the last few years. No doubt, the drive we have conducted on predatory animals and birds has been a great help.

The large blue grouse, one of our finest birds, seems to be decreasing in numbers. Where we used to see large numbers there are now but a few. They are not a prairie bird, and are found mostly in the mountains. With the research work we are doing now at the biological station we may be able to discover the trouble.

The Chinese pheasant and Hungarian partridge which we have imported and planted are thriving and multiplying rapidly. There are places where they are thick. In watching the different plantings I found only one place where it was reported they did not thrive, but this spring the sportsmen in that vicinity said they were mistaken, for they discovered these birds were not satis-

MR. SPORTSMAN!

Do you realize—

That you provide the funds available for use in wild life conservation by the Montana State Fish and Game Commission?

That money derived from the sale of hunting and fishing licenses is expended for the protection and propagation of game and game fish?

That members of the State Commission, wardens, deputy wardens and all employees are working diligently to provide better hunting and fishing for you?

That if it were not for your whole-some cooperation in this work of the Commission that there would soon be neither hunting nor fishing?

That sportsmen in eastern states now looking to Montana for their vacations buy licenses in home states which permit them to hunt for a place to hunt?

That the man who violates the closed season law, takes more than the limit or breaks any of the rules of the good sportsman, is deliberately cheating YOU?

fied with the place in which they had been liberated and had moved about six miles to a brushy place. There they had increased.



THE HUNGARIAN
Feathered Fox of the Fields

A few farmers complain about game birds injuring their crops. If they would give the birds credit for the worms and bugs they catch while the crops are growing, they would be well paid for the small amount of grain the birds eat.

In the eastern part of the state we have found a few small coveys of eastern yellow-legged prairie chicken. They no doubt have come from the Dakotas. A few years ago they were plentiful in that state.

In the near future we shall be able to devise a way of trapping game birds where they are plentiful and moving them to parts of the state where they are scarce.

The best time of day to see any of these game birds is early in the morning or about sundown.

We have a few California quail in the state, but they have not increased materially.

In 1914 Billings sportsmen shipped 48 pairs of Bob White quail from Iowa. They increased rapidly until the winter of 1919, when they were thinned out by the cold. Last fall I had the pleasure of seeing three nice coveys in one day, and they were about 30 miles from where we liberated them.

At the meeting of the State Commission at Anaconda June 27 it was agreed that approval be given an early season on sage grouse in Petroleum, Fergus and Big Horn counties with the dates set August 4, 5 and 6, inclusive. If other counties desire open seasons on these birds it is necessary that petitions be signed and presented to the Commission. The early seasons will provide sportsmen with the opportunity of getting the birds before they become scattered and seasoned with sage.

Sportsmen of the state will be given an opportunity to express their views on proposed open seasons on Chinese pheasants. These beautiful birds have thrived wonderfully well since they were imported and planted by the Montana Commission and in some counties farmers complain that they are causing damage. They must be given protection of course, yet the Commission will receive petitions signed by residents of counties desiring a short open season. These petitions will be acted on at the next regular meeting. They should be directed to Robert H. Hill, the State Fish and Game Warden at Helena.

Montana Protects Trout Waters

By H. B. FOOTE

Sanitary Engineer, State Board of Health



H. B. Foote

WHENEVER one undertakes, officially, to make a survey of conditions on any Montana stream and attempts to draw conclusions or to apply remedial measures to situations undesirable to fish life or health preservation he is immediately confronted with conflicting influences and interests. On the one hand there is the person, community, or corporation whose best interests seem to be

served by using the stream as a continuation of a sewer line, while opposed is the person, community or corporation below which objects to drawing a water supply from such a sewer. It may be a conflict between two industries or between an industry and the farmer. The combinations of conflicting interests are many. The investigator must of necessity weigh very carefully all evidence obtainable which is pertinent to the particular case.

While certain natural laws are known to operate in flowing streams tending to change the chemical, physical and biological conditions introduced by pollution, time is required for their operation and this means distance traveled by the flowing water. Before sufficient time has elapsed to effect the desired changes perhaps the interested party below the offender has been reached. It may therefore be necessary to introduce some structure or operation into the situation which will hasten the action of the natural purification processes or it may be best to eliminate entirely the sources of pollution.

All this has its financial aspect which is the base to which it seems we must all eventually come and from which we must all start in our attempts to maintain the most desirable conditions, whether we would or not.

The Montana State Board of Health is by law (Section 2641, R. C. M., 1921) charged with "the general oversight and care of all inland waters and of all streams, lakes and ponds used by any city, town, or public institution or by any water or ice company in this state as sources of water supply for domestic use and of all springs, streams, or water courses tributary thereto."

Under this law and others giving powers to this board much work has been done in relation to public water and ice supplies. While we in Mon-

tana have not yet been confronted with the very acute conditions which exist in the more densely populated sections of the nation, we do have our problems and it is our study to attempt to be just to all conflicting interests and to serve the best interests of the state as a whole.

In this work we have a mutual interest with other bodies, official or unofficial. The streams of Montana contribute in different ways to the pleasure or business of our residents and visitors. They are for the most part beautiful and a joy to the traveler and fisherman. We are in a position to keep ahead or at least abreast of progress or encroachment upon them and in this we need co-operation of all concerned. There is no desire to interfere with the rights or business demands of any one, nor is there any intention to impose undue financial burdens upon any industry or community. Our duties, however, are clearly set forth and there is no side-stepping them.

In line with the foregoing the writer conferred with state officials in Utah and Colorado and visited sugar beet factories in the respective states to ascertain existing conditions, and practices in that industry. It is hoped and

expected that this industry will increase in extent in Montana and it is very important that every one interested in the problems arising from it be awake to any dangers and obligations involved. The wastes from these plants are largely organic in nature and putrescible or fermentable. The care necessary in their disposal is therefore greater than in cases of less concentrated wastes.

Fortunately high dilution in a large stream is adequate for disposal and for the most part is available. There are, also fortunately, remedial measures available which in case of necessity can be applied within what may be considered a reasonable cost.

In the case of other industries, other problems are encountered and must be met in various ways depending upon the nature of the wastes. In some cases it may be necessary because of volume of waste, extremely high cost of treatment or practical impossibilities to give a whole stream over to the industry. Fortunately such situations are rare.

Where domestic city sewage is discharged other problems present themselves and still other remedies, if possible, must be applied. Montana is, we believe, emerging into a more prosperous era, in which money for needed improvements will be available.

Cheaper and more simple methods of sewage treatment are being sought and there is real encouragement in the prospects. All new information is eagerly sought in the belief that those communities and industries involved in this very important matter are entitled to all the advantage possible.

For effective activity in the problem of keeping Montana's wonderful streams as we want them, an intelligent and fair-minded constituency is necessary, for without favorable public sentiment a law-enforcing body is crippled.

WHISKEY GOOD FOR WORMS

TWO Blackfoot river fishermen were having no luck with flies. One suggested that they soak an angle worm in whiskey and try that. So a fat worm was obtained, put in the bottom of an old can, and some bootleg poured over him. The worm, showing well-known signs of animation, was impaled on a hook and cast in the stream.

Immediately the once placid river became violently agitated. Something churned the waters to their depths. The rod bent double and the fisherman in desperation grabbed the line. One tried to pull it in, but his companion had to come to his aid. Together they slowly reeled in, to discover that the angle worm had seized a big trout by the throat and was choking it to death.

MONTANA LEADS

SPORTSMEN of Montana who are students of the great program of conservation of wild life in which the State Fish and Game Commission is engaged, are proud of outstanding achievements which have brought Montana's foresight national recognition. While the work of conservation is proceeding, financed exclusively by the sale of hunting and fishing licenses, sales of confiscated arms and furs, and by fines, leaders in the work throughout the nation are turning their attention to ways and means by which Montana does things. Three outstanding tasks have been accomplished by the Commission:

Montana has the largest spawning station in the world at the mouth of Flint creek, Georgetown Lake, near Anaconda, where more than 50,000,000 eggs are taken during the six-weeks spawning season to keep 14 state hatcheries operating.

Montana has the largest warm-water pond culture station in the United States, recently established near Miles City through cooperation with the Custer County Rod and Gun Club. The only biological research station of its kind in the nation has just been made possible on Flathead Lake through cooperation of the State Fish and Game Commission with leaders of the greater University of Montana. Here science will aid in conserving Montana's wild life by solving problems peculiar to diseases, parasites, foods, plant life, birds of prey, drainage, migration, water pollution, and similar subjects.

Conservation in Other States

MONTANA is keeping step with the nation in pressing the program for the conservation of wild life resources. Under the leadership of the State Fish and Game Commission forests and streams of the Treasure State are being restocked for posterity. Inroads being made by resident sportsmen and by the constantly increasing number of vacation tourists are being met by increased activity in replanting fish and game. Foresighted sportsmen of the state appreciate the necessity for maintaining the supply. They glory in Montana's position of prominence as an outdoor paradise. They are determined to avoid the mistakes of densely populated eastern states in permitting wild life to be wiped out.

GAME FARMS AT INSTITUTIONS

State game farms and fish hatcheries, to be operated at various Illinois institutions, at no cost to taxpayers, will result from plans outlined in the meeting of representatives of the leading conservation association of Illinois, called by Governor Len Small.

A survey, to commence immediately, will show which of the state institutions offer best advantages for the propagation of fish, and as game farms. From the leaders in conservation movements volunteer committees will visit each state institution to investigate conditions with this end in view.

GAME REFUGES IN MICHIGAN

The department of conservation of Michigan has six major standard game refuges in operation, covering approximately 60,000 acres. Surrounding all the newer refuge units are public hunt-

ing grounds which add up to about 75,000 acres. For the most part this land was obtained by the state through tax delinquency, the balance having been purchased by money from the game fund at or below the valuations as assessed for taxation.

SANCTUARY IN NOVA SCOTIA

A new game sanctuary of 200 square miles has been established by the government of Nova Scotia, according to a bulletin of the American Game Protective Association. The area is well defined by natural boundaries, including the chief waterways of that country, such as Lake Resignol, the Shelburne River, the Roseway River, west branch of the Jordan River, the Jordan Lakes and Fifth and Sixth Lakes.

The area set aside is particularly adapted to the conservation of game in as much as it is a natural breeding ground already inhabited by a large number of game animals.

WOMEN IN WALTON LEAGUE

Many women, especially the lovers of outdoor life, are becoming greatly interested in the organization of Waltonian women, which, in a way, might be considered the woman's auxiliary of the Izaak Walton League. Many have a mistaken idea about the purpose of the Izaak Walton League and think it is only for fishermen, who delight in meeting for dinner and exchanging fishermen's yarns. The women are anxious to have that impression corrected as their main purpose in becoming Women Waltonians is to develop in time an educational program for

children so a love for all things connected with the great out-of-doors will be a part of their daily training.

GERMANY'S GAME BAG

Despite an area less than one-seventeenth as great as that of the United States and a density of population ten times greater, Germany's fields and forests yield each year an amount of game that probably exceeds the total bag here. The total number of deer of all kinds shot yearly is estimated at about 250,000, equivalent to more than 5,000 head for each of the 48 states of the Union. Nearly 1,000,000 hares and rabbits are shot each year in Prussia alone. Germany places the food value of its annual game bag at \$13,000,000.

ANIMALS FOR EXPORT

Fur farming, now a well-established industry in the United States, Canada, and Alaska, is not confined to the North American continent, according to the Biological Survey of the United States Department of Agriculture, but has extended to European countries. When the Hamburg-American liner Cleveland sailed out of New York harbor on one of its December trips it carried a large consignment of fur-bearing animals, valued at \$150,000. They were destined for fur farms in Austria, Czechoslovakia, Finland, Holland, Lithuania, Poland, Belgium and Switzerland. The live cargo consisted of 1,200 minks, 150 silver foxes, 12 raccoons and 42 muskrats. The export of live animals from American fur farms is a new development in the fur industry.

FISH AND GAME OFFICIALS IN SESSION AT HELENA



—Photo by Badgely, Helena.

Left to right—Floyd L. Smith, editor Montana Wild Life; Jack W. Carney, assistant state game warden; Robert H. Hill, state game warden; William K. Moore of Billings, commissioner; Gilbert T. Boyd of Great Falls, commissioner; Thomas N. Marlowe of Missoula, chairman of the commission; E. A. Wilson of Livingston, commissioner; John M. Schofield of Big Timber, field assistant in charge of fish hatcheries; Dr. I. H. Treece of Anaconda, field assistant in charge of hatcheries; Joseph L. Kelly of Anaconda, commissioner; Thomas O. Peasley, Helena, deputy game warden at large. The photograph was taken in front of the state capitol building following a conference of commissioners and their associates.

Big Game in Montana Forests

By WILL C. BARNES

Assistant Forester, U. S. Department of Agriculture, Washington, D. C.

MONTANA ranks fifth in the 48 states in the number of deer ranging on her national forests, according to the annual report for 1927 of the Forest Service, United States Department of Agriculture. The total in the states and Alaska shows 700,586 deer in national forests. California leads with 238,645. Oregon has 71,586; Arizona, 59,009; Idaho, 57,613, and Montana 52,368. Estimates show only 20 in West Virginia, 48 in Virginia, 85 in Tennessee, 50 in Nebraska and 225 in Michigan.

The annual census of the number of big game animals on national forests is made up of estimates made by forest officers—close observers, constantly in the field, and always on the lookout for game animals and birds. The census covers only the animals found on national forest areas, and does not take into consideration any wild life outside the forest boundaries, on the public domain, in national parks, Indian or military reservations, or on private lands.

The totals show a slight increase in antelope, the number reported being about 10 per cent higher than last year. With the exception of the few herds in captivity, the antelope seem to be thrifty and because of well-enforced protective laws are increasing gradually. For reasons not yet clear these animals do not appear to thrive under fenced conditions. The little herd on the Wichita game preserve in Oklahoma has not prospered during the last four years, in spite of everything possible in the way of care and attention. On the other hand, several rather large herds in the Northwest, running on the open ranges and competing more or less with grazing stock, are increasing in numbers. One or two herds have grown

to such a size that they have become a public burden because of their depredations in the winter upon the farmers' fields and hay stacks.

The plan of raising young antelope on the bottle for distribution to parks and zoos has proved a great success and makes possible a wide distribution of the species. The little ones, being tame and used to handling, can be shipped without danger of injury.

Black and brown bear show about a 10 per cent increase over 1926, due possibly to closer estimates. Making a game animal of this species has contributed greatly to its increase. It will be a surprise to many to learn that 660 bear were killed in the state of Pennsylvania during the season of 1926.

The Alaska report shows a heavy decrease in the number of the giant Alaska brown bear, classified with the grizzly in this census. This is due to better estimates by forest officers in Alaska who made a special study of the bear during the season. Outside of that territory there are but 880 members of the famous grizzly species in all the forests, of which nearly 50 per cent are in Montana. The record shows not a single grizzly in any national forest in California—a state in which these animals were once found in large numbers. The buffalo was never half as near total extinction as is the grizzly today.

In spite of liberal open seasons on deer, there is a steady increase, amounting to about 5 per cent each season, in the number of deer in every forest. Reports indicate that the number taken by hunters each season is about 10 per cent of the total. As in past seasons, there appear to have been about three or four hunters for each deer killed. In spite of their numbers, deer

evidently are not an easy animal to approach in the hills. Perhaps the new crop of hunters is not as expert as the old-timers.

The problem of the Kaibah herd in northern Arizona is still unsolved. The present situation is far from satisfactory. Arizona objects seriously to a large reduction in numbers, either by increasing the bag limits or through a general killing of males by hunters employed by the government for that purpose, with such disposition of the meat as may be possible. The herd, which now contains approximately 28,000 head, is not holding its own. The winter losses for the last two years have taken a large percentage of the previous year's fawn crop.

In California, on the Stanislaus forest, where some 22,000 deer were killed by government hunters in 1925 to stop the spread of foot-and-mouth disease, the recovery in numbers has been unexpectedly rapid.

Elk herds all over the country have made excellent increases since the unfortunate spring of 1920. The winters since that year have been comparatively mild and the forage growth during the summers rather above the average. Not only have the calf crops been good, but the winter losses among the calves much below the average. For these reasons the elk herds are increasing with each year until some of them are approaching the point above which further increases in numbers are fraught with danger to the animals.

About 1,000 head were killed by hunters out of the Jackson Hole herd during the 1927 hunting season, which is about the usual number. Approximately 1,500 head were taken from the Yellowstone or Park herd—not enough to offset the season's increase. The

Forest Service Census of Montana's Big Game Animals

Forest	Antelope	Bear Black or brown	Grizzly	Deer	Elk	Moose	Mt. Goats	Mt. Sheep
Absaroka		300	35	1,260	489	92		120
Beartooth	8	105	2	905	26	10		75
Beaverhead	6	218		1,490	500	378	513	41
Bitter Root		200	2	1,550	580	80	1,000	60
Blackfeet		345	27	4,050	18	58	42	
Cabinet		910	37	9,240	300		190	70
Custer	860			558				
Deer Lodge		94	2	1,320	1,050	130	450	85
Flathead		439	149	2,655	1,407	48	625	
Gallatin		475	16	1,970	307	105		248
Helena	102	242		2,285	524			
Jefferson		170	4	3,725	141			
Kootenai		700	45	11,500	45	1	275	75
Lewis and Clark		135	48	750	4,200	34	380	340
Lolo		340	8	3,840	215	3		6
Madison		290	13	2,070	368	108		520
Missoula		470	45	3,200	757	121	530	240
Total for Montana	976	5,433	433	52,368	10,927	1,168	4,005	1,880

history of both these large elk herds shows that whenever they number above 20,000 the possibility of winter losses is but a matter of time.

The several elk plants throughout the west are all prospering. Some states very wisely have announced open seasons for these animals in order to keep the number down to the proper limits of the available range.

Mountain goats and mountain sheep show small increases, while moose have seemingly become scarce on most of the national forests.

Beaver continue to increase in every part of the west. Their value to the irrigationists of the Intermountain states has been well established, while the income from pelts taken from surplus animals promises to be a permanent source of income to state game funds.

For several years the claim has been made that the scarcity of grouse throughout the mountains of the west was due to damage done by grazing sheep which trampled upon the nests, destroying either the eggs or the helpless young birds. For the last two years forest officers have been taking notes on this matter. Reports for both seasons indicate clearly that the sheep are not responsible for the shortage of these birds. Forest officers have established the fact that the eggs of grouse are laid and hatched and the young have left the nests long before the sheep reach the grazing grounds in the high ranges where the grouse are found. There is a feeling that this scarcity of grouse is due to other causes—perhaps some unknown disease, or, what is considered as more likely,

GAME REFUGES ON MONTANA FORESTS

OFFICIAL statistics supplied to MONTANA WILD LIFE by the Forest Service at Washington, D. C., show that in 15 national forests within the state the total area set aside as game refuges reaches 1,203,713 acres. Four of the 15 national forests within the state have no game preserves. The area in Montana's forests grazed by domestic stock totals 377,694 acres. The following statistics are interesting:

Forest	Total acreage inside forest	Acreage grazed by domestic stock	Cattle and horses	Sheep and goats
Absaroka	70,000	57,676	1,085	10,046
Beartooth	39,688	10,016	105	450
Beaverhead	71,485	20,000	200	5,000
Blackfoot	94,720	8,000	300	.....
Deer Lodge	210,700	2,000	476	.....
Flathead	89,235	21,760	125	.....
Gallatin	226,953	190,562	5,322	18,136
Helena	219,452	12,680	800	.....
Jefferson	64,000	2,000	20	400
Kootenai	109,800	53,000	2,238	.....
Lewis & Clark	7,680	.....	.....	.....
Lolo	1,203,713	377,694	10,671	34,032
Madison	.....	.....	.....	.....
Missoula	.....	.....	.....	.....
Total	.....	.....	.....	.....

raids upon the nests and young by some of the smaller fur-bearing animals.

In certain regions magpies are charged with excessive damage to birds and in some states bounties are now paid on the heads of these handsome but undoubtedly predatory birds.

Taking the country over, an awakened public sentiment for the preservation of wild life of all kinds and a stringent enforcement of all game laws are mainly responsible for the general increase in numbers of game animals.

KEEP FISHIN'

Hi Somers was the durndest cuss
 Fer ketchin' fish—he sure was great!
 He never used to make no fuss
 About the kind of pole er bait,
 Er weather, neither, he'd just say:
 "I got to ketch a mess today."
 An' towards the creek you'd see him
 slide,
 A-whistlin' soft and walkin' wide.
 I says one day to Hi, says I,
 "How do you always ketch 'em, Hi?"
 He give his bait another swish in
 An' chucklin', says, "I jest keep
 fishin'."

Hi took to readin' law at night
 An', pretty soon, the first we knowed,
 He had a lawsuit, won his fight,
 An' was a lawyer! I'll be blowed!
 He knowed more law than Squire Mc-
 Knab!
 An' tho he had no "gift o' gab"
 To brag about, somehow he made
 A sober sort of talk that played
 The mischief with the other side.
 One day when someone asked if Hi'd
 Explain how he got in condishin',
 He laughed an' said, "I jest kept
 fishin'!"

Well, Hi is Gov'nor Somers now,
 A big man 'round the State, you bet!
 To me the same old Hi somehow,
 The same old champeen fisher yet.
 It wa'n't so much the bait er pole,
 It wa'n't so much the fishin' hole,
 That won for Hi his big success;
 'Twas jest his fishin' on, I guess.
 A cheerful, stiddy, hopeful kind
 Of keepin' at it—don't you mind?
 An' that is why I can't help wishin'
 That more of us would just keep
 fishin'!

—R. C. Rose.

Deer, Elk and Bear Thrive in Montana's Forests

Montana has more grizzly bear in her national forests than any other state in the Union, according to estimates of the United States Forest Service. Of the total grizzlies listed in the United States and Alaska, Montana has 433. Alaska is credited with 2,500, including the Alaska brown bear. Montana has 52,368 deer of a total in the nation of 700,586. The Treasure State has 10,927 elk of a total of 74,179 in the 48 states and 1,168 moose in a total of 7,950. The following summary by states of big game animals in national forests at the close of 1927 has been compiled by the Forest Service at Washington, D. C.:

	Antelope	Bear Black or brown	Grizzly	Deer	Elk	Moose	Mt. Goats	Mt. Sheep
Alaska	.....	6,100	2,500	59,300	9	2,055	9,500	2,006
Alabama	.....	.....	.....	125	.....	.....	.....	.....
Arizona	2,157	595	20	59,009	841	.....	.....	262
Arkansas	.....	.....	.....	1,450	.....	.....	.....	.....
California	612	10,303	.....	238,645	126	.....	.....	682
Colorado	114	2,641	19	27,757	8,519	.....	.....	3,835
Florida	.....	25	.....	650	.....	.....	.....	.....
Idaho	2,065	5,728	142	57,613	7,965	639	3,246	1,403
Michigan	.....	31	.....	225	.....	.....	.....	.....
Minnesota	.....	1,385	.....	7,300	.....	1,850	.....	.....
Montana	976	5,433	433	52,368	10,927	1,168	4,005	1,880
Nebraska	.....	.....	.....	50	.....	.....	.....	.....
New Hampshire	.....	700	.....	3,000	.....	3	.....	.....
New Mexico	1,047	964	21	35,831	135	.....	.....	200
Nevada	177	.....	.....	5,455	.....	.....	.....	170
North Carolina	.....	90	.....	4,120	35	.....	.....	.....
Oklahoma	20	2	.....	300	350	.....	.....	.....
Oregon	29	6,911	1	71,508	5,785	.....	.....	40
Pennsylvania	.....	150	.....	1,175	18	.....	.....	.....
South Dakota	2	.....	.....	2,946	856	.....	.....	.....
Tennessee	.....	27	.....	85	.....	.....	.....	.....
Utah	.....	435	13	32,147	2,090	.....	.....	177
Virginia	.....	450	.....	48	75	.....	.....	.....
Washington	.....	7,130	98	27,668	9,712	2	2,583	10
West Virginia	.....	200	.....	20	.....	.....	.....	.....
Wyoming	466	1,717	133	11,791	26,736	2,233	.....	2,583
Total all States	7,665	51,017	3,380	700,586	74,179	7,950	19,334	13,248

MONTANA STATE FISH AND GAME COMMISSION

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FLOYD L. SMITH, Editor.

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FISH AND GAME EDUCATION

TEACHING old dogs new tricks is a tough task. It's difficult to explain to an aged Indian, for instance, just why he should respect closed seasons on wild life. In his younger years he killed his meat when and where he desired. His white brother who slaughtered the buffalo, brought in deer by the wagon load and blue grouse by the gunny sack, now looks back to those days while in reminiscent mood, and wonders what has become of the herds and coveys. Education is an important factor in wild life conservation. Men and women who love the open must know, appreciate and realize the necessity for game guardianship. Western sportsmen perusing their favorite eastern sport magazines scoff at such problems as stream pollution, continuous closed seasons on deer, upland birds and native big game. Montana's magnificent distances have, in many cases, caused them to feel that problems that come with congested population are foreign to Montana consideration. Statistics tell a different story. The east is more and more looking westward for its vacation joys. Montana's fish and game are an asset that means millions of dollars to the railroads, the mercantile man, the hotel keeper, the banker, the resort owner, the hardware dealer, the stockman, the mining man, the newspaper editor, the farmer and men and women in all walks of life. It is a heritage that must be conserved. The gospel of sane conservation must be taught to boys and girls. Specialists of the fish and game department, clubs of sportsmen and other organizations should deem it a duty to impress the message upon minds of young men and old. Education may come in many ways. Montana's commission has instructed every deputy warden to conduct himself in such manner that arrests for game law violations shall be considered fundamentally educational. When a violator is arrested and prosecuted, that's education of the impressive variety. In some cases it may not "take" with the individual, but he has learned something, nevertheless, and his experience has a wholesome effect on others. It has been comparatively few years ago since a deputy game warden was looked upon as a sort of necessary evil, to be tolerated but shunned. Today, through straightforward efforts of the Montana Commission, the deputy game warden is welcomed by enthusiastic sportsmen who greet him as friend, counsellor, benefactor, and guardian of their interests.

TRAPSHOOTING AND SPORTSMANSHIP

IN EVERY business, sect, social realm, commercial activity or sport, human nature and modern conditions have combined to mark qualified leaders who, through their zeal and enthusiasm, have schooled themselves in higher, better, nobler lines of thought in their chosen hobby or endeavor. As long as the world wags on there will be a distinct line of cleavage. There will be the man who elects to pursue his business or sport for mercenary or ulterior motives. Then there will be the man who dignifies his profession and his sport by electing to glorify it through honest endeavor. There's a vast difference between a hunter and a sportsman. There are hunters who deliberately violate man-made laws, yet no man honored by the term sportsman will permit animal instincts to lead him into the quagmire of wanton destruction of the heritage of wild life that must remain for posterity. That's one of the big reasons why enthusiastic sportsmen blessed with the trapshooting hobby have ever been listed among the strongest supporters of rules of fair play, the honor and distinction of being capable of winning graciously and losing without a whimper. They are among the staunch exponents of the conservation program of the State Commission. They are gentlemen at home, office, club, at the traps, in the field, in the stream. They have been schooled in the finer things of sportsmanship. It's not a piker's game. The poor loser, the whiner, the game hog may attempt to break into the ranks of men who make up the trapshooting fraternity, but time and experience will quickly eliminate them. There's no more effective place to discover unsavory attributes of a companion than at the traps, in forest, in stream or in camp. Montana is fortunate in listing among its leading sportsmen such men as will compete in the state trapshooting tournament at Butte July 13-14-15. They are four-square.

POLITICS GETS THE GATE

MONTANA'S State Fish and Game Commission, as well as commissions in every other state, has constantly been harassed by the perennial threat of political interference in the work of preserving and propagating wild life. Continual appeals are being made by political henchmen for appointments for favored associates, for open seasons, for closed seasons, for preference in every activity of the department, yet, because of the fact that efficiency has been made the paramount consideration by the Montana Commission, the Treasure State has attained a position of enviable prominence throughout the nation in the vast program of wild life conservation.

"In some states where politics has controlled the sportsmen's fund, contributed for the purpose of protecting and propagating wild life, the lives of the beasts and birds have too often been traded for votes," said President Ross L. Leffler of the Pennsylvania Game Commission in a recent communication to employees of the commission.

"The Game Commission and all its employees are and must continue to keep out of politics," continued President Leffler, who makes it plain that it is immaterial to the game and fish whether the game warden is a Democrat or a Republican. All employees are forbidden to engage in any political activity beyond casting their own ballots on election day. Should any employee desire to seek an elective office he must first secure a leave of absence without pay for the duration of the campaign.

The question as to how game and fish departments can be kept out of politics has agitated sportsmen's organizations for a long time. The Montana and Pennsylvania Commissions are demonstrating one way that it can be answered.

BIGGER AND BETTER TROUT

MONTANA sportsmen who have for years diligently opposed the activities of anglers who persist in filling their baskets with small trout, just over the legal limit, have been given additional oratorical fuel in an interesting editorial in the current issue of FIELD AND STREAM. Read it:

"Was there ever a fisherman who would rather catch a 6-inch trout than a 10-inch speckled beauty? Such a fellow doesn't exist. Then why, in the name of good sport, do most states legalize the taking of 6- and 7-inch fish? Perhaps a 10-inch limit would be too high, but most certainly 6 inches is too small.

"Frequently you hear men say they prefer the smaller fish for eating. Possibly so, but then there are smelt and sardines. And you can safely wager that the man who likes to eat the 6-inch trout will get some slight satisfaction from a fish a little larger.

"The advocates of the short limit argue that small fish will strike and probably be killed in being removed from the hook and that therefore it should be legal to take them. Some even advocate eliminating the size restriction entirely. Their argument is that the fisherman should be made to keep every fish he catches and quit when he reaches a prescribed bag limit.

"If the angler uses a certain amount of care, he'll never harm a trout in taking a fly from its mouth. Seldom is it necessary in removing a fly to take a small trout from the water. If you must take him from the water, wet your hands and with thumb and finger take him by the upper jaw. Or, for that matter, if your hands are wet, you do not harm him by grasping him around the body, so long as you do not squeeze him unnecessarily.

"The bait fisherman is not so fortunate, as often the fish will swallow the hook. It's seldom such a fish can be returned to the water unharmed. But then there are large hooks.

"The answer to the whole thing is to stop fishing in the smaller streams. Let them act as feeder brooks for deeper waters, and each will furnish its quota of fish for the fishing stream below.

"New Jersey set the pace by stocking with mature trout. Other states are following this example with results apparent to the most skeptical. Why, then, in the name of all that's right and just, should the angler be permitted to dabble a hook in a two-foot stream in the hope of catching a 6- or 7-inch fish while he sacrifices a dozen or more smaller ones?

"It is not unusual the early part of the season, when the trout are taking worms, to see a full-grown, able-bodied man slipping along the edge of a stream that will hardly wet your feet. Such a fellow should buy a bowl of goldfish and take his sport at home."

THIS MONTH'S COVER

ONE of the finest bits of wild life photography produced in many a day is presented to readers of MONTANA WILD LIFE on this month's cover. The close-up photograph of the nesting grouse, awaiting motherhood, is an actual photograph secured after much strenuous endeavor on the part of the amateur photographer by use of all the wiles and cunning available. The original photograph was taken by D. N. Reynolds of Butte near Tarkio, Montana, during the nesting season. It was taken with a small camera, $3\frac{1}{4} \times 4\frac{1}{4}$, and then enlarged by using the same camera with which the original was taken. It was given one-fifth of a second exposure on a bright day and every detail of the nesting grouse is plainly discernible in the reproduction. The photograph was prepared for display at the Montana State Fair. It's a study in wild life that is unusual.

THE MADISON CALLS

Oh, for a day with the talking waters,
Waters that murmur and gurgle and play;
Waters that snarl and quarrel and thunder,
And crash on the boulders that bar their way!

Ringnecked pheasants have increased at such a rate in South Dakota that Oscar H. Johnson, Director of Game and Fish for that state, estimates upward of 2,000,000 were shot during the last open season.

LONG LIVE THE DUCKS!

WE AMERICANS are an excitable people. With eyes fixed on the heavens we stroll in blissful unconcern up to the very edge of the precipice, then with one foot poised over eternity we execute a neat 'bout face and cheat the world of a shuddery thrill. One after another our natural resources have been abused to the point where the prophetic statistician could write down the day and hour when they would exist no more, and always at the last second of the last possible minute we have pulled up short and begun rebuilding what we have torn down. Probably this proves something or other to the psychology sharks, but whether it does or not, sundry thousands of nerve-wrecked propagandists will testify that it is a fact.

The editor of the New Mexico Conservationist comments in the current issue on this situation, which is of particular interest to Montana sportsmen who are students of the migratory water fowl situation.

Our suddenly acquired interest in the waterfowl of this continent is an excellent case in point. Since the first white man landed on these shores and trained his matchlock scatter gun on the nearest ducks, the birds have been steadily decreasing in numbers. All of us have realized this, and most of us have admitted it. For years experts have told us that the time when the last duck would come hurtling down in answer to the roar of a shotgun was imminent. It is a matter of exhaustive record that the toll of the gunner has been augmented by the preventable poisoning of millions of birds on the alkali marshes of the west. Volumes of highly accurate reports have been prepared showing that the feeding and resting grounds along the migration routes are being rapidly either drained or monopolized by gunners, with the result that the harassed birds must largely keep flying once they get within the confines of our inhospitable land.

Nevertheless, we paid but scant heed to the handwriting on the wall. It is true that we were more or less pushed into a treaty with Canada looking forward to the protection of waterfowl, and we have officially banned market hunting and spring shooting. But for years bills have been introduced in Congress with a view to doing something positive for the benefit of the birds, and have invariably failed to pass.

But observe the 'bout face. With hardly any quibbling the Senate has passed a migratory bird refuge bill, appropriating a million dollars a year for the purchase of marshlands. A measure has passed appropriating an additional \$350,000 for the reflooding of the Bear River marshes, where it is estimated that some ten million ducks have died of disease caused by low water during the past few years. There seems to be prospects for the passage of a bill furnishing money for the flooding of the Cheyenne Bottoms, in Kansas, while there is more than a possibility that a measure appropriating funds for similar work in California will eventually get by.

So the villain is slain, and the ducks will live happily ever after. Not upon the money appropriated this year, of course, but the ice being broken, no succeeding session of Congress will be complete without a good deed done for the birds. We will yet get the ducks back to the point where the federal bag limit will represent a restriction rather than a challenge.

INDIANS AND THE ANTELOPE

FEDERAL usurpation of state rights with respect, particularly, to the protection and propagation of fish and game, has long been fightin' talk with fair-minded men. Another glaring example of these misguided activities has been indelibly impressed upon Montana sportsmen during the last year in the wanton destruction of antelope on Indian reservations. The federal government says the redskin may fish and hunt when and where he pleases on his own reservation regardless of protective laws that must be observed by white men anxious to conserve the supply of wild life. An antelope on an Indian reservation is, under prevailing federal laws, the red man's meat. When the antelope crosses the reservation into the white man's territory, the fleet little animal that is nearing extinction is fully shielded and protected by the white man's law. If this coddling of the Indian, who has accepted civilization made possible by the white man in every other particular, is to be continued, then the noble warrior should be governed by laws enforced by state game guardianship.

Montana Scientists Study Wild Life

By MORTON J. ELROD

Professor of Biology, State University of Montana



M. J. Elrod

MONTANA'S biological research station on Flathead Lake, the only station of its kind in the nation, established and operated through cooperation of the State Fish and Game Commission and leaders of the greater University of Montana, has started functioning.

At a general conference of the staff of workers the general problem of work for the season has been perfected.

M. J. Elrod will be the responsible head for the work. Dr. R. T. Young will have as his part of the study the work dealing with the microscopic animals, with the number and distribution of fish in the lake, and with the general problem of the animal life of the lake.

J. E. Kirkwood, professor of botany, will conduct investigations into the minute plant life, the ultimate source of food of the animals, which in turn are used by minnows; in fact, the ultimate source of fish food.

J. W. Howard, professor of chemistry, will do the chemical work, analyses of

water, the absorbed gases in the water, and all other studies dealing with the chemical content of the lake water.

G. D. Shallenberger, professor of physics, will make investigations dealing with light and other rays and their penetration and with the temperature of the water, and the effect of light, other rays, and temperature in the plant and animal life of the lake. If possible he will also take sonic soundings of the lake.

The supervising committee will consist of M. J. Elrod, professor of biology in the state university, who will have general supervision; R. T. Young, professor of biology, who will be in immediate charge of the investigations; M. A. Brannon, chancellor of the university; C. H. Clapp, president of the state university; T. N. Marlowe, chairman of the State Fish and Game Commission; and Dr. I. H. Treece of Anaconda, fish culturist.

Ramifications of the possible studies were presented; relative to fish the following topics were suggested as affording opportunity for investigation:

The food of species of fish in the lake will be investigated. Mr. Elrod has a report in manuscript dealing with the examination of about 500 stomachs. A copy of this report will be given to the staff and to the State Fish and Game Commission. Other subjects are: The time of spawning of the different species, distribution and migration, deep

water fishing, the problem of the whitefish, fish diseases and parasites, introduced fish and their relation to game fish, and results of netting fish for commercial purposes.

It was agreed that during the summer it will be possible to extend the study on the food of fishes, determine the quantity of fish food as related to the number of fish the lake may support, and learn something about the abundance, kinds, distribution, and migration of commercial and game fishes, their inter-relations, increase or decrease in numbers, as related to sport fishing and commercial netting.

The microscopic life of the lake is an important factor in fish study, as to it one must ultimately go in determining the food of fish, and consequently the relative numbers which any body of water can support. This food consists of bacteria, diatoms, desmids, and algae among plants, and protozoa, rotifers, entomostraca, hydra, worms and insect larvae among animals. The collecting and study of these is slow, tedious, and difficult work. Some of it has been done. For the most part it is as yet undone.

The plants of the swamps and marshes make hiding places for minnows and small fish, and abound in microscopic life. The plants of such places have not been extensively studied, and have an important bearing on the problem of fish food and fish. The



Biological and Research Station on the shore of Flathead Lake now being operated by the State Fish and Game Commission in cooperation with leaders of the University of Montana in solving problems of disease and propagation of wild life. It is the only station of its kind in the United States.

plants of the lake shore should also be included, for they encroach on the water, or supply hiding places for birds and animals that prey upon fish.

These swamps and marshes are of importance in another way, as they are the places for the introduction of plants which produce food for game birds. There seems to be good reason for the introduction of such plants, as the lake is a resting place for large numbers of migratory birds.

Mollusks make a large portion of the food of the whitefish in the Great Lakes. To what extent the whitefish of Flathead Lake use small clams and snails as food is not known. The lake and its swamps are relatively poor in molluscan fauna, but it will be interesting to know what mollusks are present, in what abundance, and to what extent they are eaten by fish. It may be possible to introduce clams for the pearls they will produce, although it is hardly likely such introduction would have any effect on the supply of desirable fish food.

Concerning the water of the lake there are many features that affect the food and the lives of fish. Fish are animals, and must have oxygen. The contamination or pollution of the water, its chemical content, its oxygen content at different levels or depths, its temperature at different seasons and at different depths, have much influence on the presence or absence of fish. These chemical and physical features, together with the presence or absence of plankton (microscopic organisms), are very closely related to the growth, development, and distribution of fish.

Every animal and plant makes demands upon the environment for existence. These demands vary with the plant or animal, and, within limits, must be met, or the organism will not thrive, and will disappear. Many items combine to make a suitable home for fish, in which they will thrive. To determine these items, and their relation to fish, is a very complex problem, which must be attacked from as many points as possible.

To indicate more clearly the complexity of the problem, we may ask the question, to what extent is the chemical material, brought into the lake from the surrounding country, related to the microscopic life of the lake, which life is the ultimate food of fish? The answer is important, far reaching, and difficult to obtain. It is clear, however, that an answer is desirable. To get it involves a well prepared program, which may, perhaps, need to be followed through several seasons for proper verification before an answer can be given.

It is now known that light does not penetrate water to great depth. It is also known that plants depend upon light for their growth and development. It is known that the various rays, which, combined, make sunlight, affect plant and animal life in different ways. To what extent light penetrates the water of Flathead Lake is unknown. During fall and winter the water is quite clear, and penetration deeper than during the active growing season of June, July, and August, when the flood waters contain great quantities of sediment.

Then there are heat rays, and other rays. Cosmic rays, recently discussed, have great influence on life and growth. The water grows colder as it becomes deeper. What temperatures are necessary for plant growth, and for fish life at its best, have not been determined. The physicist may be able to determine some valuable data, as has been the case in investigations in other lakes.

Other problems naturally arise. Mention has been made of the desirability of finding places where food for aquatic game birds may be cultivated and developed. Many birds prey upon fish, but their importance in relation to fish abundance has been only guessed at. It is quite likely their influence has been greatly overestimated. The number of birds, period of time during which they are present and operating, and the kinds and number of fish taken are items as yet unknown.

Much work has already been done on the summer birds. P. M. Silloway, now at Geyser, Montana, spent some five summers at Flathead Lake at the Biological Station. The results of his study are included in two state university bulletins, "Summer Birds of Flathead Lake," and "Additional Notes to Summer Birds of Flathead Lake." However, there is much more that may be added relative to the ducks, geese, plover, gulls, snipe, and other water birds, as related to the waters of Flathead Lake, and the life thereof. No observations have been made concerning the introduced birds, the bob white or quail, the Chinese pheasant or the Hungarian partridge as related to native birds, to agriculture, or to sports.

Jimmy Robinson --- Wizard



J. M. Robinson

MONTANA trapshooting enthusiasts who will gather at the annual state tournament at Butte, July 13-14-15, to decide state championships, are listed among the most zealous supporters of the great program of conservation of fish and game in which the State Commission is engaged. The very fundamentals of trapshooting etiquette are based upon principles of good sportsmanship. Hence, whether in the field or angling for Montana trout, these enthusiastic sportsmen are ever on the alert in supporting constructive activities of the Commission.

Montana has been given added recognition in national trapshooting circles by the selection of James M. Robinson, former Montana resident, as official statistician of the Amateur Trap-

shooting Association of America, with headquarters at Vandalia, Ohio. There the national association has its own home—the only sport in America which owns its own home. Robinson is well known to shooters of larger Montana centers and has relatives residing in Sheridan county.

How would you like the job of keeping the averages of over 10,000 trapshooters in North America? Quite a task most of us will admit. And not only must these figures be compiled as often as they are received at headquarters of the Amateur Trapshooting Association at Vandalia, but they must be absolutely right even to the smallest fraction. For be it known that shooters treasure their hitting marks with fully as much pride as do the baseball performers.

We all know what a rumble and roar would be forthcoming if a diamond player were robbed of a smash. Consider then just what an ardent expert of the clays would say in the event that the compiler of the percentages missed one. There is an old proverb that reads: "Figures count," and as far as trapshooting goes that is true.

And now about the hero of this story. Jimmy Robinson is the lad entrusted with collecting the trapshooting figures and Jimmy keeps them right. He's the official statistician of the A. T. A. and a wizard in figures. Jimmy has the records of each shooter in the country in his files and he's likewise got them locked in his brain. He can tell you offhand the average of about every marksman in North America and there's a heap of them.

Jimmy is a live wire, with a magnetic personality and enthusiasm that is never quenched. He's an all-round athlete, but next to trapshooting, baseball and hockey are his favorite sports. In 1921 Robinson managed the Waihalla, N. D., team. This aggregation was one of the best semi-pro clubs in the northwest. In addition to directing the play of the team, Jimmy did the receiving and a lot of hitting.

Robinson served four years with the 44th Canadian infantry battalion, where he performed with his usual efficiency and received a medal for bravery, as well as several battle scars. And now he's on another firing line for there are a lot of guns and shells around where he works, but it's not quite as hot or dangerous in this dugout.

The Montana Grayling

(*Thymallus Montanus*)

By John W. Schofield, Field Assistant in Charge of Hatcheries



J. W. Schofield

THE Montana grayling originally existed only in the tributaries of the Missouri river above Great Falls and was noticed by Lewis and Clark during their journey to the Pacific Coast. Lewis and Clark alluded to it as a new kind of white or silvery trout. In 1872 James W. Milner of the U. S. Fish Commission discovered this same specie in a tributary of the Missouri near Camp Baker, Montana, and after describing same named it *Thymallus montanus*. While it is closely related to the Arctic grayling (*T. signifier*), there is enough difference between the two so that each is now given a specific rank.

It is probable that the Arctic grayling was the parent stock from which the Michigan and the Montana grayling descended, and from the fact that the habitats of the three species are so widely separated it is not unreasonable to suppose that the Michigan and Montana forms were conveyed thence from the Arctic regions during the Glacial period. This theory is strengthened by the fact that Elk Lake, a half mile from the Montana grayling station, is abundantly inhabited by both grayling and lake trout (*Crestivomer namaycush*), which latter fish is found nowhere else west of Lake Michigan.

There are few places where the grayling are abundant and where they thrive and do well. To a certain extent they are found in streams in Michigan.

The Arctic grayling is found from the Mackenzie river westward through Alaska and north to the Arctic Ocean.

In Montana they are abundant in Georgetown Lake, the largest spawning field in the United States. They are also found in several other streams and lakes in Montana, but not in as large numbers as at Georgetown Lake.

The Montana State Fish and Game Commission has the world's largest spawning station at Georgetown Lake. This lake is 18 miles from Anaconda, between that city and Philipsburg. This station produces eastern brook trout eggs, native, or black-spotted trout eggs, rainbow trout eggs and grayling eggs. The total egg production of the four species each season runs from 35 to 50 million eggs.

From 15 to 20 million grayling eggs are taken, but I venture to say this amount is not one-twentieth of the grayling eggs that could be taken.

Where Big Un's Strike



Montana's brooks, streams and lakes, her pools and play places, are beckoning to vacationists. Here's a catch of beauties laid out on the rocks for display purposes after filling the creel with fightin' fools.

Each day when the spawning crew starts to work at this station it is necessary to spend two or three hours putting grayling above the head rack in order to reach the native trout to spawn them.

In data supplied by Foreman Kenneth Macdonald of the Georgetown station this year, his figures show, from careful check and count of sixteen grayling spawned, that 12,693 eggs per grayling, or 203,088, were produced. This may be hard to realize, yet when one stops and considers that these eggs are just about one-seventh of an inch in diameter and run from 750 to 850 to the fluid ounce, it becomes clear to one that these figures are not so staggering as they seem at the first glance. The average trout egg runs from 260 to 300 per fluid ounce.

Grayling eggs can not be handled the same as trout eggs in incubating. When first taken, the eggs are of a rich amber color, owing to the presence of a large oil drop, which renders them almost semi-buoyant. This makes it imperative that they be eyed in hatching jars with a good pressure of water in order that all danger from bunching and fungus may be checked. If they are placed on ordinary trays, touching each other, and exposed to a lateral current of water, they adhere in bunches, fungus appears and the loss would be tremendous. After the eggs are eyed and just about ready to hatch they may be placed on ordinary hatching trays, as the eggs are heavier by this time and not likely to float.

The grayling when hatched has a very small yolk sack and the fry is slender and delicate. Due to the minute size of the fry it is hard to feed them with artificial food, though in some instances this is being done, but the loss under artificial feeding of grayling is from 50 to 70 per cent.

HOW MANY EGGS IN A FISH?

PISCATORIAL experts in the employ of the State Fish and Game Commission have found a solution for the problem: How many eggs are contained in the annual spawn of a Montana native trout? Sportsmen have asked the question countless times. They have made varied guesses. To settle the argument, scientific tests were made by Kenneth Macdonald, foreman of the Anaconda hatchery, under supervision of Dr. I. H. Treece, field assistant in charge of hatcheries. The tests were made at the Flint Creek spawning station at Georgetown Lake, which is conceded to be the largest in the world. The spawning crew kept count and 539 female native trout produced a total of 984,312 eggs or an average of 1,830 eggs each. A similar test was made on Montana grayling. Of the 16 females stripped a total of 203,088 eggs was secured or an average of 12,693 to the grayling. The grayling eggs average 750 to 850 to the fluid ounce while the average trout eggs number 260 to 300 to the fluid ounce.

MONTANA FISH

ARRANGEMENTS have been completed for the preparation of a series of educational articles for MONTANA WILD LIFE, explaining from a scientific standpoint, and likewise in terms that will be understood by every angler, the origin, habits and history of Montana's game fish. The first of these articles is presented herewith on the Montana grayling, from the pen of John W. Schofield of Big Timber, field assistant in charge of hatcheries. In succeeding issues other articles will appear on the native trout, the eastern brook, the bull trout, Flathead Lake whitefish, the rainbow trout, the carp, sucker, squawfish, sunfish, bass and other varieties. These articles are being prepared by Montana men who know Montana fish.

Trapshooting History in Montana

By C. H. SMITH

Secretary Montana State Sportsmen's Association



C. H. Smith

BACK in 1894, just 34 years ago, trapshooters of Montana organized the Montana State Sportsmen's Association and for more than a third of a century the organization has continued to function. The annual state trapshooting tournament to be held at Butte this year, July 13, 14 and 15, serves to bring to mind memories of bygone days when trapshooting, as in modern times, brought

together the finest sportsmen of the state. Since those days the original nucleus of 1894 continues to govern the sport of clay target competition in Montana as recognized by the Amateur Trapshooting Association of America. Names of men who have been dominant factors in the upbuilding of Montana appear among the honored winners of historic trapshooting trophies. They were hardy fellows, those old-time leaders, and devotees of the sport today have taken up the cudgels of sportsmanship in their places.

The Montana State Sportsmen's Association was organized in April, 1894, with John F. Cowan as president, C. A. Tuttle of Anaconda secretary, and A. J. Fisk of Helena vice-president, and the first tournament under the management of the association was held in Helena in July, 1894. C. H. Smith of Butte was elected secretary the following year, 1895, and has served continuously since. There are now 40 clubs in the state association with about one-third of that number active.

Helena donated a team cup and won it in 1894. The Helena club also donated an individual cup which was won by Dr. Pleasants of Helena.

The live bird medal was won by John F. Cowan. The association quit shooting live birds in 1901 at Great Falls, D. D. Twohy winning that year.

The team cup was finally won by Billings in 1913, that club having won it three times.

Cup Winners

The individual cup winners, according to my records, were:

- 1894—Dr. Pleasant, Helena.
- 1895—Jim Conley, Deer Lodge.
- 1896—D. D. Twohy, Anaconda.
- 1897—C. H. Smith, Butte.
- 1898—Dan Jaeger, Butte.
- 1899—P. J. McGowan, Butte.

- 1900—Dan Jaeger, Butte.
- 1901—J. W. Huse, Fort Benton.
- 1902—Matt Orr, Dillon.
- 1903—J. W. Huse, Fort Benton.
- 1904—D. D. Twohy, Anaconda.
- 1905—F. Moseley, Idaho Falls (then in the Montana association).
- 1906—C. E. Owan, Chinook.
- 1907—E. K. Preuitt, Helena.
- 1908—John F. Cowan, Butte.
- 1909—Reynolds Prosser, Helena.
- 1910—Tom Rowe, Butte.
- 1911—C. L. Parsons, Moore.
- 1912—John F. Cowan, Butte.
- 1913—J. C. Norris, Hardin.
- 1914—Bill Harker, Billings.
- 1915—W. R. Tarrant, Buffalo, Wyoming (then in the association).
- 1916—C. L. Parsons, Moore.
- 1917—P. H. O'Brien, Butte.
- 1918—E. W. Renfro, Butte.
- 1919—P. H. O'Brien, Butte. Final win.

High Average

The state association general average medal contest dates back to 1898. This medal is given each year by the state association to the high average for the state tournament, except doubles, all other events to count. The winners:

- 1898—J. F. Cowan, Butte.
- 1899—C. H. Smith, Butte.
- 1900—Dan Jaeger, Butte.
- 1901—H. L. Nolbach, Great Falls.
- 1902—W. A. Hillis, Libby.
- 1903—E. F. Confarr, Livingston.
- 1904—J. W. Huse, Fort Benton.
- 1905—James Drumgoole, Anaconda.

C. H. SMITH, GENTLEMAN

FEW sportsmen of America occupy the position of merited esteem in the hearts of their associates such as that of C. H. Smith of Butte, secretary of the Montana State Sportsmen's Association. He's the daddy of them all in the trapshooting game. For 33 years he has served faithfully and diligently as secretary of the state organization. Way back in 1894, just after the lean years, the organization was formed. In 1895, when the state association was only a year old, C. H. Smith was elected secretary and he has served continuously since. Silver threads now streak their way across his thatch. He dusts a clay target occasionally that never got away a few years ago, but C. H. Smith continues to be the life of every registered tournament within the state. And he manages to attend the majority of them. He's the best loved and admired exponent of the sport in the west. He's a thorough sportsman at the traps and in the field. He casts a wicked fly and wields a dangerous fowling piece. Montana sportsmen are proud of him. Hundreds of them are his pupils. He glories in their achievements. They glory in the knowledge that C. H. Smith has been their teacher.

- 1906—F. Moseley, Idaho Falls.
- 1907—A. W. Woodworth, Missoula (now at Spokane).
- 1908—Reynolds Prosser, Helena.
- 1909—C. C. Goddard, Butte.
- 1910—Neal McMillan, Idaho Falls.
- 1911—Frank Weatherhead, Laurel.
- 1912—Frank Weatherhead, Laurel.
- 1913—J. C. Norris, Hardin.
- 1914—Frank Weatherhead, Laurel.
- 1915—Frank Weatherhead (now at Billings).
- 1916—Lee Williams, Deer Lodge.
- 1917—Mendenhall, Billings.
- 1918—E. W. Renfro, Butte.
- 1919—E. W. Renfro, Butte.
- 1920—P. H. O'Brien, Butte.
- 1921—E. W. Renfro, Butte.
- 1922—E. W. Renfro, Butte.
- 1923—E. W. Renfro, Butte.
- 1924—Record lost—Think it was Lee Kimmel of Kalispell.
- 1925—P. H. O'Brien, Butte.
- 1926—W. R. Wilcoxson, Great Falls.
- 1927—E. W. Renfro, Butte.

A. T. A. MEDAL

From 1914, when put in competition, the state singles championship winners are:

- 1914—Lee Williams, Deer Lodge.
- 1915—C. L. Parsons, Moore.
- 1916—Bill Tilzy, Moore.
- 1917—H. Schnack, Forsyth.
- 1918—E. W. Renfro, Butte.
- 1919—E. Robbins, Billings.
- 1920—P. H. O'Brien, Butte.
- 1921—E. W. Renfro, Butte.
- 1922—N. J. Birrer, Dell.
- 1923—E. W. Renfro, Butte.
- 1924—Lee Kimmel, Kalispell.
- 1925—P. H. O'Brien, Butte.
- 1926—Frank G. Knight, Great Falls.
- 1927—W. R. Wilcoxson, Great Falls.
- 1928—(?)—To be named at Butte in July.

OUT IN THE FIELDS WITH GOD

The little cares that fretted me,
I lost them yesterday,
Among the fields above the sea
Among the winds at play
Among the lowing of the herds,
The rustling of the trees,
Among the singing of the birds,
The humming of the bees.
The foolish fears of what may happen
I cast them all away,
Among the clover-scented grass,
Among the new-mown hay,
Among the husking of the corn
Where drowsy posies nod,
Where ill thoughts die and good are born,
Out in the fields with God.

Western Game Wardens to Meet



R. H. Hill

ATENTION of fish and game conservationists of the west will be turned toward Seattle in August when the Western Association of State Game Commissioners meets in eighth annual session in conjunction with the International Association of Game, Fish and Conservation Commissioners in their 22nd annual session. Montana has been signally honored this year in

the selection of Robert H. Hill, State Fish and Game Warden, as president of the western association. It covers 11 western states and its functions are of vast importance to the welfare of wild life in this area. The joint meetings of the two associations will be held August 27-28 at the Olympic Hotel at Seattle.

Courtesy committees will be maintained in Victoria and Vancouver B. C.,

Portland, San Francisco, Los Angeles and Seattle to look after the comfort of delegates enroute to the western convention.

Thirty accredited representatives of foreign countries stationed at Seattle are expected to participate in the conference. A series of luncheons and banquets has been arranged.

Robert H. Hill, Montana's State Game Warden, is president of the association. D. E. Pettis, State Game Warden of Arizona, with headquarters at Phoenix, is vice-president, and Clinton W. Rowley of Seattle is secretary.

State game wardens in the association are as follows:

Arizona—D. E. Pettis, Phoenix.

California—F. M. Newbert, Sacramento.

Colorado—R. G. Parvin, Denver.

Idaho—Richard E. Thomas, Boise.

Montana—Robert H. Hill, Helena.

Nevada—State Game Warden, Reno.

New Mexico—State Game Warden, Santa Fe.

Oregon—Harold Clifford, Portland.

Utah—Dave H. Madsen, Salt Lake City.

Washington—S. F. Rathbun, Seattle.

Wyoming—J. T. Scott, Cheyenne.

100,000,000 DUCKS AND GEESE

According to an estimate by Dr. Harry C. Oberholser, head biologist of the Biological Survey, United States Department of Agriculture, there are 100,000,000 wild ducks and geese in the United States, Southern Canada, Alaska and Mexico. Approximately 700 observation stations are being maintained under the direction of the bureau.



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JUNE SETS RECORD

FINANCIAL receipts from hunting and fishing licenses have established a new record for June in the history of the State Fish and Game Department, according to figures compiled by Cashier Dave Marks at press time. Total receipts for the month up to June 30 touched the high mark of \$44,896. Receipts from resident hunting and fishing licenses at \$2 each reached \$39,374; non-resident licenses at \$3.50 hit \$1,333.50; general non-resident \$60, and alien fishing licenses \$1,080. From these receipts the sportsmen turned over 25 cents out of every license or \$5,039 to the biological fund for the destruction of predatory animals for the protection of live-stock and big game.

FOR ONE ONLY

Young Harold was late for Sunday school, and the minister inquired the cause.

"I was going fishing, but father wouldn't let me," announced the lad.

"That's the right kind of a father to have," replied the reverend gentleman. "Did he explain the reason why he did not let you go?"

"Yes, sir. He said there wasn't bait enough for two."

FOXES

Pen-Raised Alaskan Blues and Pedigreed Silvers. Order Now—Early Delivery more satisfactory. We guarantee, in Your hands or Ours, 100% increase under ranching contract on adult Blues. 6 Bank Ref. for 25 yrs. and Satisfied customers. Breeder-Agents wanted—Your real opportunity. "One of the World's largest"—Free booklet tells all. **CLEARY BROS., Fox Farms, Empire Bldg., SEATTLE, U.S.A.**

TOO POINTED

Disgruntled Amateur to guide: "You must think I am a perfect fool."

Patient (?) Guide: "Wall, no, nobody is perfect."



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DUCKS

A SCHOOL BOY assigned to prepare an essay on ducks, submitted the following: "The duck is a low heavy-set bird, composed mostly of meat and feathers. He is a mighty poor singer, having a hoarse voice, caused by getting so many frogs in his throat. He likes the water, and carries a toy balloon in his stomach to keep him from sinking. The duck has only two legs and they are set so far back on his running gear by nature that they came pretty near missing his body. Some ducks when they get big have curls on their tails and are called drakes. Drakes don't have to set and hatch, but just loaf and go in swimming and eat everything in sight. If I was a duck I would rather be a drake."

REMARKABLE FLIGHT OF BIRDS

The astonishing power of sustained flight of some birds is shown in the returns of birds banded under permit from the Bureau of Biological Survey. An Arctic tern banded when newly hatched on July 22, 1927, at Turnevick, Labrador, by Oliver L. Austin of Tuckahoe, N. Y., was taken at LaRochelle, France, on October 1, 1927, by M. Robert Pradier. This young bird had probably made a non-stop trans-Atlantic flight of over 4,000 miles to reach the place where taken, an aerial exploit equal to Lindbergh's.

The Wife: Henry, baby has swallowed the ink. What shall I do?

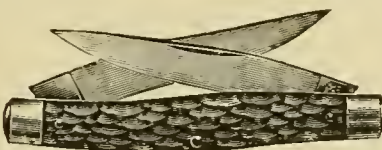
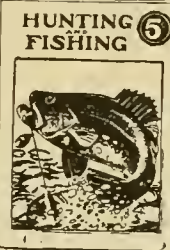
Professor: Write with the pencil, my dear.

As the little chorus girl said to her sweetie, as she kissed him good night: "So long, I'll sue you later."

Hunting & Fishing

is a 52-page monthly magazine crammed full of hunting, fishing, camping and trapping stories and pictures, valuable information about guns, rifles, fishing tackle, game law changes, best places to get fish and game, etc. Biggest value ever offered in a sporting magazine. And here's the famous

Remington Sportsman's Knife with a stag handle and two long slender blades especially designed to meet the exacting requirements of skinning and cleaning fish, game birds and fur-bearing animals. Blades are of superior quality steel with



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strong, durable, keen-cutting edges. The points are shaped just right for a good, clean job of slitting and skinning. **SPECIAL OFFER**—We will send you Hunting and Fishing Magazine for a whole year; 12 big issues and this Remington Sportsman's Knife both for \$1.

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It is your desire to maintain hunting and fishing for yourself as well as for posterity. You are interested in keeping in touch with activities of the Montana State Fish and Game Department. You are a believer in sportsmanship.

The magazine, MONTANA WILD LIFE, has been established by the department to aid in this great educational work of conservation. The subscription rate has been placed within the reach of every man and woman in the state. Do you wish to aid in making MONTANA WILD LIFE a bigger, better, more powerful champion of your interests? Think it over and then fill out the accompanying blank.

Send the Magazine to Your Friends

To the Editor, Montana Wild Life,
State Capitol Building,
Helena, Montana.

Please send MONTANA WILD LIFE to the following addresses for one year, beginning with the next issue after receipt of this order. Check is enclosed to cover these subscriptions at 50 cents each:

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MONTANA WILD LIFE

Official Publication of the Montana State Fish and Game Department

What the Other Fellers Think About Us

Helena Independent, Helena, Mont.—As recent as fifteen years ago, foresighted men who realized that something must be done to conserve the wild life of Montana, found it difficult to convince, not only residents but visitors, that steps must be taken to protect and conserve the game if the state was to continue, as it had been, one of the few sections where the term "sportsmen's paradise" meant something. The game had been so plentiful that there had been little account taken of the future. There were game laws which provided for closed seasons, all too short, and there were game wardens, few in number, and there were sportsmen who appreciated that the brakes must be applied. They did their best to impress their views upon the public but did not receive sympathetic response.

Gradually improvement in the situation became noticeable. The late Jake DeHart, state game warden, did a great deal to start the movement for betterment. He was backed by a State Fish and Game Commission whose members were sportsmen in the full sense of the word. Two of these men, Chairman Thomas N. Marlowe and Joseph L. Kelly, the latter of Anaconda, are still members of the Commission of five.

Robert H. Hill, who is now warden, served for eight years under DeHart and held the position of chief deputy straight through until the Erickson administration was inaugurated, when he became head of the department. He has faithfully carried out the policy of game protection and game conservation started perhaps fifteen or twenty years ago by the old Commission and advanced more rapidly year by year, as sportsmen rallied in support of the department.

It has taken a lot of work to educate the public along the lines of game conservation. Much remains to be done. To aid in the campaign to keep Montana to the fore as one of the best hunting and fishing sections in the United States, MONTANA WILD LIFE, a monthly official publication of the State Fish and Game Commission has been established. It is edited by Floyd L. Smith, an experienced newspaper man and an ardent sportsman, who will give the public accurate and authentic information regarding the activities of the game department in its program of conserving wild life and at the same time maintaining the supply of fish and game to the maximum point.

The June issue of MONTANA WILD LIFE, just off the press, is a most creditable publication. It contains articles of great interest to sportsmen and to the public in general. It is well illustrated with pictures of scenes in Montana forests, along its streams and in the hunting fields. Best of all, only accurate and authentic information is published.

E. E. Cruger, secretary The Watson Boat Works, Spokane, Wash.—"The much looked for first issue of MONTANA WILD LIFE has arrived and the State Department is to be congratulated on its 'grown-up' appearance. Having lived for many years in Montana I am glad to see this effort put forth to aid in conserving its great game resources."

Charles L. Sheely, Spokane—"Sure wish to congratulate the Montana Department on the classiness of the new magazine and am enclosing check for two subscriptions."

Spokane Daily Chronicle, Spokane, Wash.—"Montana's State Fish and Game Department has just issued the first edition of its official publication, MONTANA WILD LIFE, under direction of Floyd L. Smith, who is well remembered as former sports editor of The Spokesman-Review. The publication is nicely illustrated, well arranged and merits attention."

Butte Miner, Butte, Mont.—With 16 large pages filled with newsy, well-written articles relative to Montana fishing and hunting, MONTANA WILD LIFE, official publication of the Montana State Fish and Game Department, has made its appearance. The excellent magazine is profusely illustrated and the feature article is by Tom Marlowe, chairman of the Commission, entitled "Montana Fights to Save Wild Life."

Daily New Northwest, Missoula, Mont.—A magazine devoted to the conservation of the game that abounds in Montana, fittingly called MONTANA WILD LIFE, has been received by Missoula sportsmen and is attracting more than a little favorable comment. The magazine is published by the Montana State Fish and Game Commission, of which Thomas N. Marlowe, Missoula attorney, is chairman.

Attractive in design, with a number of well-chosen cuts decorating its pages; filled with material interesting to any sportsman and primarily to Montana sportsmen, the magazine bids fair to fill a much-needed place in Montana publications. Floyd L. Smith, newspaper man of Helena, is editor.

Great Falls Tribune—With an editorial policy calling for the dissemination of authoritative, accurate and authentic information regarding activities of the Montana Fish and Game Department, statistics of an educational value and reports and information as to activities of Montana sportsmen, MONTANA WILD LIFE, official publication of the Fish and Game Department, was welcomed by Great Falls sportsmen.

Edward M. Dott, Harlowton Times—"Officers of the Montana Fish and

Game Department are to be congratulated in giving sportsmen of this state the kind of a magazine they want."

Attorney D. H. Morgan, Anaconda—"After reading the articles contained in the first issue of MONTANA WILD LIFE, which afforded me genuine pleasure, I feel that I cannot be without future copies, hence I'm enclosing subscriptions for myself and a group of friends."

Choteau Acantha, Choteau, Mont.—Volume 1 Number 1 of MONTANA WILD LIFE, official publication of the Montana State Fish and Game Commission, a creditable and valuable publication, has made its debut into Montana journalism. Judging from the selection of material, the editorials, and the general makeup of the publication, the editor, Floyd L. Smith, is a man of capability and taste, coupled with an ardent love of wild life—a love which prompts him to sense its value to the commonwealth of Montana and to champion its cause. The Acantha is pleased to endorse the objects of "Montana Wild Life" and to commend it to local people.

W. F. Aldrich, Publisher The Independent-Observer, Conrad, Montana—"MONTANA WILD LIFE will fill a much-needed want among sportsmen of the state. The first edition was splendidly done and I hope the good work continues."

Carlos Avery, Secretary-Treasurer American Game Protective Association, New York—"We are delighted with MONTANA WILD LIFE. Nothing contributes more to development of wholesome public sentiment and correct understanding of game problems of a state than such a splendid publication."

Webb Rice, General Counsel Izaak Walton League of America for Nebraska, Norfolk, Neb.—"Here's my subscription and I wish to thank you for mailing the first edition. We expect to get many valuable pointers for Nebraska from the work you are doing in Montana."

H. J. Denney, National Director Izaak Walton League of America, Duluth, Minn.—"I wish to take this opportunity to congratulate the Montana Department of Fish and Game upon the splendid introductory edition of MONTANA WILD LIFE. I read it from cover to cover. This kind of publicity should be backed up by every Montana citizen for the preservation of wild life means a great deal more to the welfare of the state than the average person realizes. We in Minnesota are now waging some merry battles in behalf of our remaining wilderness areas and it is hoped we can save a little for those who come after."